

In-Hospital Stroke Response Teams: What One Hospital Has Learned

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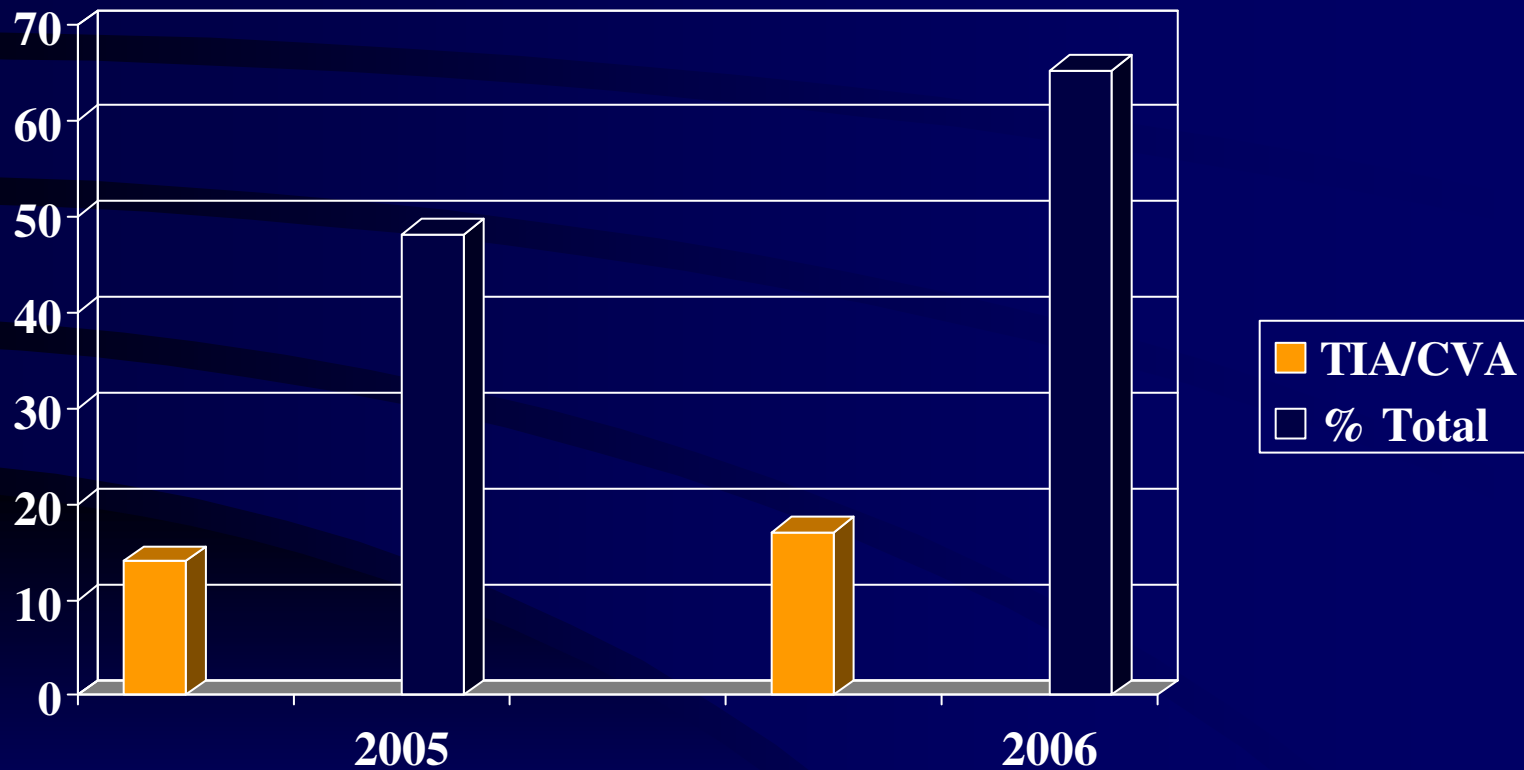
“Code 19”

- Definition
- History
- Team members
- Process

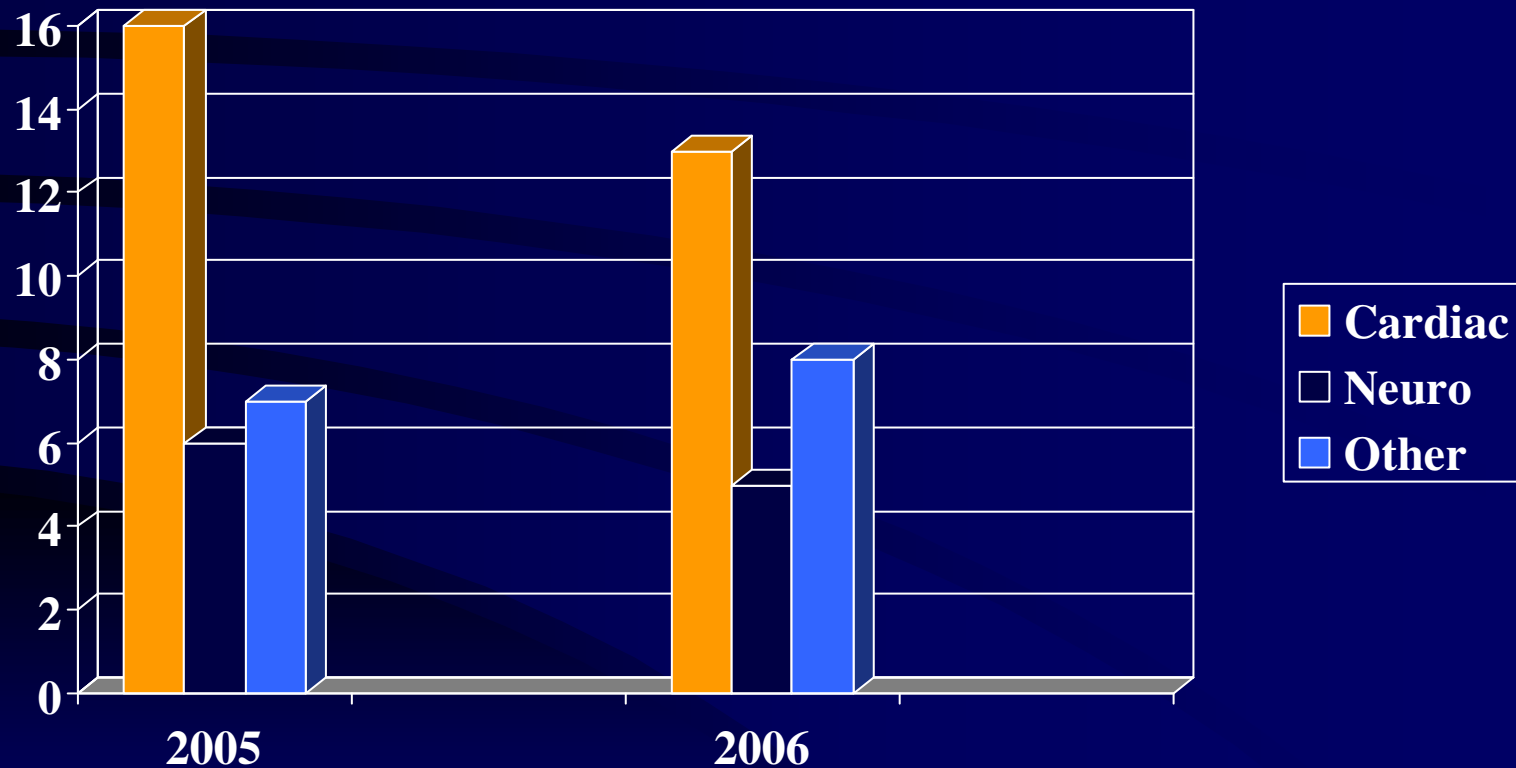
Results of Code 19 Process

- 2005 29 Code 19's
- 2006 26 Code 19's
- How accurate was our process
in identifying actual
TIAAs/CVAs?

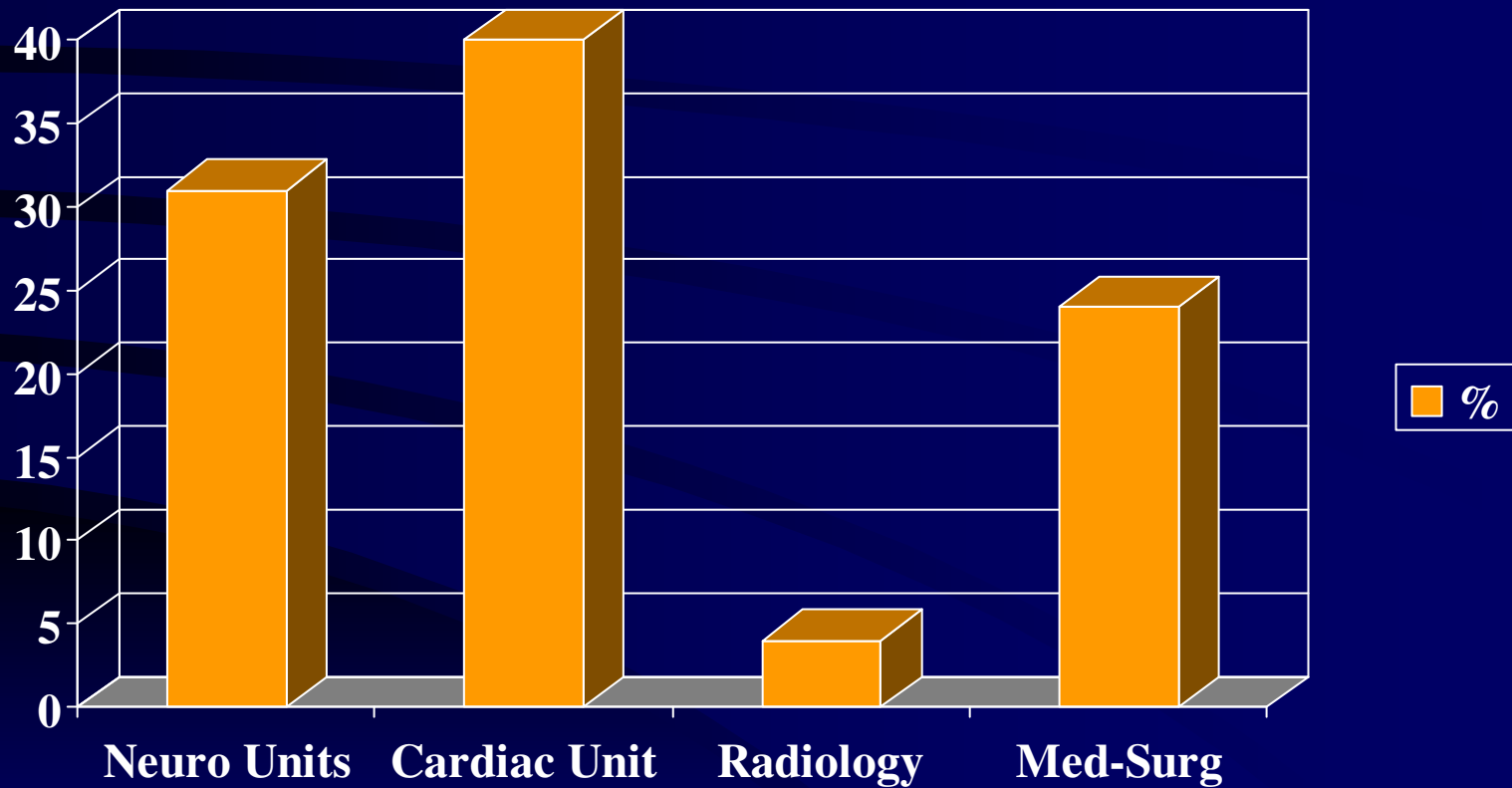
Confirmed CVA/TIA Diagnosis



Which patients were having strokes (admit dx)



Code 19 Distribution by Unit



One group was notably absent...

Post CAB Patients



- 2005 – There were a total of 26 strokes in post-CAB patients
- 2006 – There were a total of 32 strokes in post-CAB patients

This gave us a clearer picture of
our opportunity!

2005 – Total of 42 confirmed
CVAs occurred in inpatients

2006 – Total of 49 confirmed
CVAs occurred in inpatients

68 of 89 occurred in patients with
cardiac primary diagnoses –
predominantly cardiac surgery

Why were post-CAB surgical patients excluded from the Code 19 process?

Several reasons...

- There was a sense that there was nothing to be done for these patients anyway
- The CT surgeons reinforced the traditional approach of “neuro consult tomorrow” and strongly suggested that all stroke tx available was contraindicated and even detrimental to their patients
- Code 19 education process needed reinforcement with staff
- Staff questioned neuro findings in the light of ventilator/sedation/ “pump head”

This prompted the question of what **COULD** be done for these patients? Was this an exercise in futility?

In Depth Review of our Patient Population revealed lots of opportunity...(CABG only)

Demographics		
	#	%
Age 50-59	5	14.29%
Age 60-69	5	14.29%
Age 70-79	6	17.14%
Age 80 or greater	5	14.29%
Stroke noted POD 0	3	8.57%
Stroke noted POD 1	4	11.43%
Stroke noted POD 2	4	11.43%
Stroke noted POD 3 or greater	8	22.86%
Stroke noted POD unclear	2	5.71%

Data analysis

Pre-Op History

- Stroke history 2/21 5.71%
- Prior MI w/n 48 hr of surgery 10/21 28.57%
- Hx Prior PCI 3/21 8.57%
- LVEF % >40% 15/21 42.86%
- LVEF % 30-35% 4/21 11.43%
- LVEF % < 30% or unknown 2/21 5.71%
- Hx prior A Fib 2/21 5.71%

Data Analysis

Pre-op Anti-coagulation

- ASA 28.57%
- Plavix 8.57%
- ASA/Plavix 2.86%
- Total pre-op anti coag admin 40%

Data analysis

Op Procedure		
Op- CAB	2	6.25%
CAB x 2-3	8	38.10%
CAB x 4	4	19.05%
CAB x 5	7	33.33%
ALOS	18.4	

Data Analysis

Atrial Fibrillation/ Pts Treated

- Pts w pre-existing AF 2/0
- **Pts w new onset AF postop 8/8**
- Med admin. < 2 hours 37.50%
- Med admin. 2 - 4 hours 12.50%
- Med admin. 16 or > hours 50.00%

Data Analysis

Discharge anticoag use (excludes 6 deaths)

- ASA 40.00%
- ASA/Plavix 33.33%
- Lovenox/ASA 13.33%
- Coumadin/ASA 6.67%
- No anti coag 6.67%

Data Analysis

- **Post-op Encephalopathy Noted%**
- Yes 47.62%
- No 47.62%
- N/A 4.76%
- Code 19 Appropriate 11 - 52.38%
- Code 19 Initiated 2 -9.52%
- Stroke confirmed via CT/MR 75.00%

Data Analysis

- **Stroke to Extubation # Days/%**
 - Prior to extube 7 / 33.33%
 - Day of extube 4/ 19.05%
 - After extube 6/ 28.57%
 - Unclear 2/ 9.52%
 - Stroke death 2/ 9.52%

Total mortality – 17.1%
(literature reports an average mortality of 24%)

Literature pointed to other opportunities

- IA tPA is an option for this patient subgroup
- Mechanism of stroke in post-CAB patients is likely from two main sources : atheromatous emboli from ascending aorta secondary to surgical technique (60%) and cardioembolic secondary to hypocontractility and/or atrial fibrillation/flutter
- Risk stratification in this group has been well studied and is even quantifiable to assist with patient selection, use of off pump technique and prophylactic approaches to complications where possible

In the final analysis, there was much we could do...

- Implemented “sedation vacation” for patients q 4 hours so that neuro assessment can be accomplished
- IA tPA is available for these patients
- Post-CAB orders in revision to be more aggressive and directive for ICU nurses in early tx of atrial fibrillation/flutter
- Discussion underway to enhance prophylaxis with anti-arrhythmics in high risk patients and statins in all patients where possible

More recommendations...

- Seeking clearer discharge management of secondary stroke risk
- Reviewing opportunity for intraoperative aortic ultrasound to guide cannulation techniques and operative approach (OP)
- Exploring risk stratification scoring to assist in candidate selection
- Reviewing anticoagulation practice in post-CAB atrial fibrillation/flutter of greater than 48 hours
- Nurses re-educated and encouraged to call Code 19.

Questions?